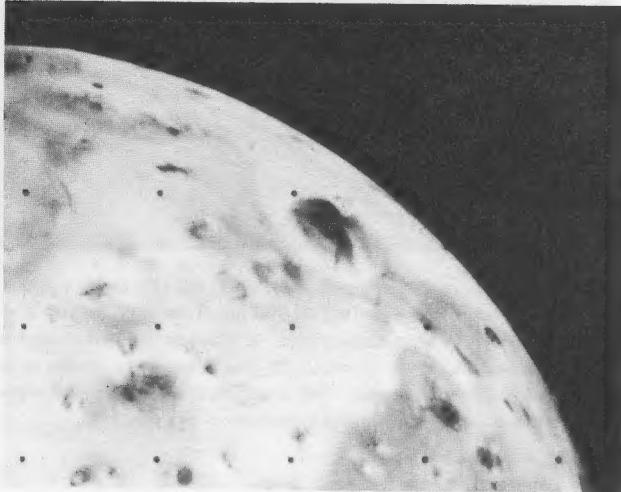


Voyager Bulletin

MISSION STATUS REPORT NO. 38 MARCH 12, 1979



THAR SHE BLOWS — These photos of a volcanic eruption on Jupiter's satellite Io present the evidence for the first active volcanic eruption ever observed on another body in the solar system. The photo at left, taken from a distance of 499,000 kilometers (310,000 miles) on March 4, shows a plume-like structure rising more than 100 kilometers (60 miles) above the surface, a cloud of material being produced by an active eruption (dark, fountain-like feature near the limb). At least four eruptions have been identified on Voyager 1 pictures and many more may yet be discovered on closer analysis.

On a nearly airless body like Io, particulate material thrown out of a volcano follows a ballistic trajectory, accounting for the dome-like shape of the top of the cloud, formed as particles reach the top of their flight path and begin to fall back. Spherical expansion of out-flowing gas forms an even larger cloud surrounding the dust.

Beyond its creators' wildest dreams, Voyager 1 has successfully met its first objectives, streaking past Jupiter, threading its way among the five astounding inner satellites, and discovering that Jupiter, like Saturn and Uranus, is a ringed planet.

"... Superlatives fail us. The data speaks for itself."

Robert Frosch
Administrator
National Aeronautics and Space Administration

Alan Lovelace
Deputy Administrator
National Aeronautics and Space Administration



Several regions have been identified by the infrared instrument on Voyager 1 as being several hundred degrees Fahrenheit warmer than surrounding terrain, and correlated with the eruptions. The fact that several eruptions appear to be going on simultaneously makes Io the most active surface in the solar system and suggests to scientists that Io is undergoing continuous volcanism, revising downward the age of Io's surface once again.

Taken 1 hour, 52 minutes later, the photo at right shows plume-like structures rising more than 100 kilometers (60 miles) above the surface. Another characteristic of the observed volcanism is that it appears to be extremely explosive, with velocities more than 2,000 miles an hour (at least 1 kilometer per second) — more violent than any terrestrial volcanoes like Etna, Vesuvius or Krakatoa.

The wealth of information returned by its eleven scientific experiments will keep the analysts busy for years, especially when coupled with that being returned by its sister ship Voyager 2, now less than four months from its own trek through the Jovian system.

"... spectacularly successful."

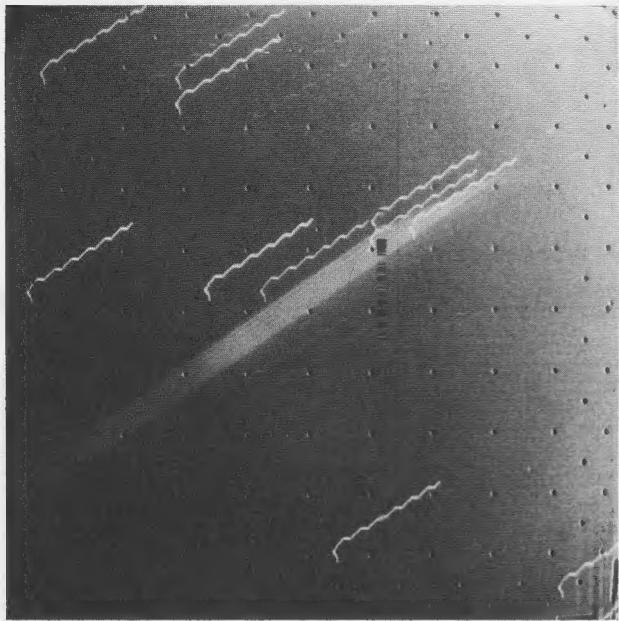
Robert Parks
Manager, Voyager Project
Jet Propulsion Laboratory



National Aeronautics and Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

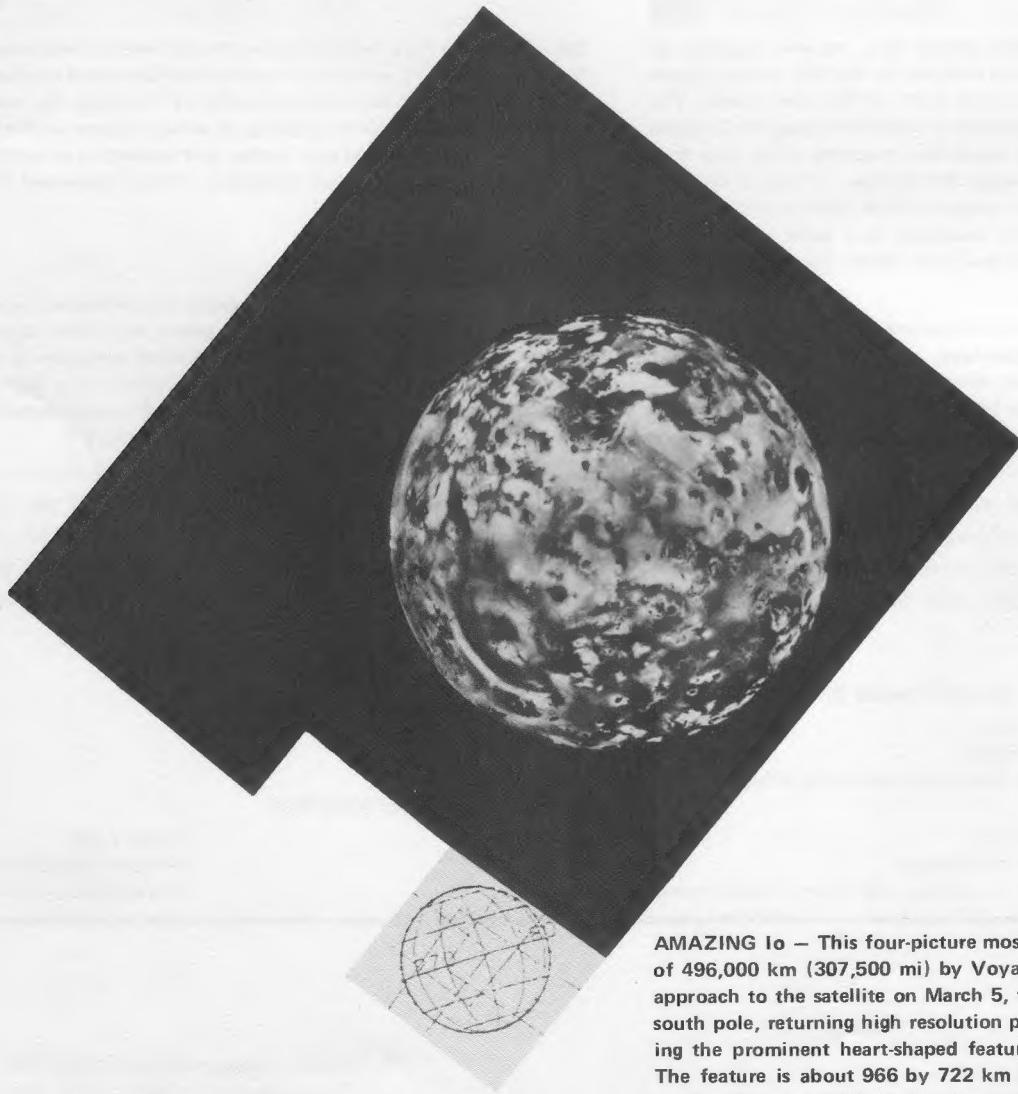
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JUPITER – A RINGED PLANET – Voyager 1's narrow-angle camera detected this thin, flat ring of particles around Jupiter's equator on March 4. A time exposure of 11.2 minutes also captured star trails of the beehive cluster of 11 bright galaxies in the background. A slight nodding of the spacecraft due to its several long instrument booms — one is 43 feet long — accounts for the wavy motion of the star trails and the six exposures of the ring. Com-



prised of dark particles, the ring is 29 to 32 km (18 to 20 mi) thick, and was seen about 57,615 km (35,800 mi) from Jupiter. The width of the ring has not been determined, as Voyager viewed it edge on. It has a stellar magnitude of about 22 (the faintest star visible to the naked eye is 6th magnitude). The black dots are calibration points in the camera. At right, an artist's concept of the ring.



AMAZING Io — This four-picture mosaic of Io was taken at a range of 496,000 km (307,500 mi) by Voyager 1 on March 4. At closest approach to the satellite on March 5, the spacecraft flew under Io's south pole, returning high resolution pictures of the surface, including the prominent heart-shaped feature at lower left in this view. The feature is about 966 by 722 km (600 by 480 mi) across. The smallest features visible in this view are 10 km (6 mi) across.